

THE PROCESSES AND OUTCOMES OF PROFESSIONAL  
LEARNING IN AN INNOVATIVE SCHOOL: THE  
CONSTRUCTION OF AN EXPLANATORY MODEL

Thesis submitted by

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# Contents

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<b>List of Tables .....</b>	<b>v</b>
<b>List of Figures.....</b>	<b>vi</b>
<b>Abstract.....</b>	<b>vii</b>
<b>Declaration.....</b>	<b>ix</b>
<b>Acknowledgements .....</b>	<b>x</b>
<b>Dedication.....</b>	<b>xi</b>
<b>1. Introduction.....</b>	<b>1</b>
1.1 Aim of the thesis .....	5
1.2 A framework to guide the research.....	7
1.2.1 Teaching and learning that support deep understanding .....	8
1.2.2 Characteristics of professional learning that promote effective teacher learning	10
1.2.3 Change processes and perspectives .....	12
1.3 The research questions.....	14
1.4 What is the potential contribution of this thesis?.....	16
1.5 How is the thesis organised?.....	17
<b>2. Literature Review: Preconceptions and sensitising concepts.....</b>	<b>19</b>
2.1 Introduction .....	19
2.2 Guiding themes in the initial literature review .....	20
2.3 Aspects of learning and pedagogy that support deep understanding.....	21
2.3.1 Reflections on learning.....	21
2.3.2 Learning by chance or design (Intentional and incidental learning) .....	22
2.3.3 Learning for understanding .....	24
2.3.4 Learning and expert learners .....	27
2.3.5 Learned capabilities and knowledge categories .....	28
2.3.6 Stages in the learning process.....	29
2.3.7 Learning and reflection.....	33
2.3.8 Pedagogical practices that support effective learning .....	34
2.4 The characteristics of professional learning that promote effective teacher learning..	38
2.4.1 Action research.....	40
2.4.2 Reflective practice .....	42
2.4.3 Learning communities and learning organisations .....	44
2.5 Change: processes and perspectives .....	45
2.6 Summary.....	50
<b>3. Methodology and methods: Ways of knowing about teachers' learning in context .....</b>	<b>55</b>
3.1 Introduction .....	55
3.2 What underlying principles guided this research?.....	56
3.2.1 Ontological and epistemological position .....	56

3.3	What methodology was used in the research?	58
3.3.1	The philosophy of qualitative research	58
3.3.2	An interpretive case study design	59
3.4	What methods were used in the research?	60
3.5	What actions were taken in the research?	63
3.5.1	Preliminary work	63
3.5.2	The more structured actions	66
3.5.3	Questionnaires and inventory	67
3.5.4	Case study teachers	68
3.5.5	Additional interviews	70
3.5.6	Committee participant	71
3.5.7	Delivery of professional learning	71
3.5.8	Document analysis	72
3.6	What processes were used in analysing the data?	73
3.6.1	An example of the initial data analysis and theorising process	74
3.7	Establishing trustworthiness in this research	80
3.8	What are the ethical issues involved in this research?	85
3.9	Summary	87
<b>4.</b>	<b>A learning environment that enabled and facilitated teachers' learning: contributions of contextual conditions, organisational elements, relationships and teachers' characteristics and capacities</b>	<b>88</b>
4.1	Introduction	88
4.2	Overview of the explanatory model and sections of the chapter	91
4.3	Overall school contextual conditions that facilitated teachers' learning	96
4.3.1	School culture and philosophy	96
4.3.2	<i>Supportive and encouraging leadership</i>	121
4.3.3	<i>Learning Space: Physical and technological environment</i>	126
4.4	Organisational elements that facilitated teachers' learning	133
4.4.1	Tutor group	135
4.4.2	Interdisciplinary curriculum	138
4.4.3	University Modules	146
4.4.4	Professional learning strategy	148
4.5	Relationship Factors	164
4.5.1	Professional partnerships	164
4.5.2	Students	166
4.5.4	Teacher colleagues	167
4.6	Contrasting the explanatory model of professional learning at Fulton to research on professional learning that supports exceptional outcomes	169
4.7	Summary	177
<b>5.</b>	<b>Teachers' Stories of learning in an innovative school</b>	<b>178</b>
5.1	Introduction	178
5.2	Lisa's story	181
5.2.1	Lisa's learning characteristics	182
5.2.2	Learning with and from teacher colleagues	183
5.2.3	Collaboration in interdisciplinary curriculum teams: emotional and intellectual influences on learning	184
5.2.4	Interdisciplinary curriculum teams supporting strategic and deep learning	188
5.2.5	Deeper learning through access to expertise	190
5.2.6	Deeper learning through interactions with students	191
5.2.7	Learning through reflective practice and action research	192
5.2.8	Learning from Lisa's story	194

5.3 Scott's story .....	195
5.3.1 From research scientist to teacher .....	196
5.3.2 Previous experiences of learning and sense of self as a teacher .....	197
5.3.3 New culture and new learning opportunities .....	198
5.3.4 Learning through the affordance of distributed leadership .....	200
5.3.5 Ongoing intentional learning for pedagogical leadership .....	202
5.4 Jackie's story .....	202
5.4.1 Jackie's background experiences and beliefs .....	202
5.4.2 Reflective practice and writing to learn as an affordance for learning .....	204
5.4.3 Tracking shifts in Jackie's thinking .....	205
5.4.4 Clarifying beliefs to develop new understandings supported by the affordance of physical proximity .....	206
5.4.5 Use of specific language to describe the learning process .....	207
5.4.6 Outcomes of Jackie's learning; transforming practices and professional identity .....	208
5.4.7 Learning from Jackie's story .....	210
5.5 Johann's story .....	212
5.5.1 Johann's background .....	212
5.5.2 Just here to teach... a focus on pedagogy .....	213
5.5.3 Access to expertise... the influence of a mentor .....	215
5.5.4 The influence of students .....	216
5.5.5 Intentional learning through action research .....	217
5.5.6 Exploring the affordance of writing to learn .....	222
5.5.7 Learning from Johann's learning .....	223
5.6 Barry's story .....	224
5.6.1 Individual characteristics and links to career stage trajectories .....	224
5.6.2 Barry's background experiences and connections to affordances that supported his learning .....	226
5.6.3 The interaction of motivation, curriculum writing and access to expertise .....	227
5.6.4 Additional affordances that supported learning about pedagogy .....	228
5.6.5 Teachers' work as learning .....	229
5.6.6 Recognition of the role of the structured professional learning strategy .....	230
5.6.7 Barry's contested views as an affordance for others' learning .....	231
5.6.8 Seeking evidence to support the value of the vision and learning at Fulton .....	231
5.6.9 Learning from Barry's story .....	232
5.7 Learning from the teachers' stories and their influence on the explanatory model of teachers' learning at Fulton. ....	233
<b>6. Outcomes of teachers' learning in an innovative school.....</b>	<b>237</b>
6.1 Introduction .....	237
6.2 Teacher-level outcomes .....	239
6.2.1 The outcomes of teachers' perceptions of their most significant learning about teaching and learning .....	240
6.2.2 Changes in teachers' beliefs as an outcome of teachers' learning .....	243
6.2.3 Changes in teachers' practices as an outcome of teachers' learning .....	249
6.2.4 Teachers' understanding of learning and teaching and its influence on changes in beliefs and practices .....	252
6.2.5 Reflecting on the outcomes of teachers' responses to the initial survey .....	259
6.2.6 Findings from the follow-up teacher survey .....	262
6.2.7 Diverse personal and professional outcomes for teachers generated by their learning .....	265
6.3 Outcomes of teachers' learning for students .....	267
6.4 Outcomes of teachers' learning for the school as a learning organisation .....	271
6.5 Outcomes of teachers' learning for schooling in general .....	273
6.6 Outcomes of teachers' learning for professional partners .....	274
6.7 Summary .....	275

<b>Chapter 7 Conclusion: looking back and looking forward .....</b>	<b>278</b>
7.1 Introduction .....	278
7.2 Relevance of the explanatory model of teachers' learning for Fulton.....	279
7.3 An explanatory model that explains and supports transformation for all? .....	281
7.4 Connecting teachers' learning with outcomes for teachers, students and the school.....	287
7.5 Reflecting on the sensitising ideas of the thesis .....	290
7.6 Learning from the outcomes of the research .....	292
7.6.1 Commitment to and clarity of the vision .....	293
7.6.2 Insightful leadership .....	293
7.6.3 Personalised professional learning .....	294
7.7 Reflections on the research process .....	295
7.8 Future research.....	295
7.9 Final reflection.....	297
<b>Appendix A.....</b>	<b>299</b>
<b>Appendix B.....</b>	<b>303</b>
<b>Appendix C.....</b>	<b>303</b>
<b>References.....</b>	<b>307</b>

## List of Tables

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Table 2.1 Summary of Wiggins & McTighe’s Facets of Understanding .....	27
Table 2.2 Influences and effect size of influence on student achievement. ....	36
Table 2.3 Levels of use: A framework for analysing innovation adoption. ....	49
Table 3.1 Generating “trustworthiness” Maxwell’s Framework for Reflexive Responding .....	84
Table 3.2 Validation techniques to reduce threat to trustworthiness – Maxwell’s Framework for Reflexive Responding .....	85
Table 4.1 Overarching domains and underlying affordance of the explanatory model of PL at Fulton .....	94
Table 4.2 Weekly timetable and scheduling of Central Studies across two years .....	141
Table 5.1 Overview of case study teachers and alignment to affordances for learning.....	181
Table 5.2 Johann’s explicit and implicit beliefs and implications for pedagogical practices across key teaching and learning areas. ....	220
Table 6.1 Use and timing of surveys in the research process.....	239
Table 6.2 Initial survey questions on teachers’ perceptions of learning, processes that supported learning, and perceived changes as a result of working and learning at Fulton.....	240
Table 6.3 Student opinion of satisfaction with school (ACER, 2005).....	270

## List of Figures

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Figure 1.1 Framework for investigating professional learning at Fulton.....	16
Figure 2.1 Adaptation of Moon’s (1999) Map of Learning .....	32
Figure 2.2 Thought Processes in Teaching (Atkinson & Claxton, 2000) .....	35
Figure 2.3 Sensitising ideas framework that guided the research process .....	53
Figure 3.1 Overview of stages in the research linked with Moon’s Map of Learning .....	77
Figure 3.2 The grounded theory process followed in this research .....	82
Figure 4.1 Factors that contribute to creating affordances for teachers’ learning.....	91
Figure 4.2 Overarching domains of the explanatory model of PL at Fulton .....	95
Figure 4.3 Underlying affordances generated by the interaction of the overarching domains of the explanatory model of professional learning at Fulton.....	95
Figure 4.4 An explanatory model of professional learning at Fulton .....	96
Figure 4.5 The explanatory model of professional learning at Fulton from a resources perspective .....	96
Figure 4.6 Lower level floor plan .....	127
Figure 4.7 Upper level floor plan.....	128
Figure 4.8 The explanatory model of professional learning at Fulton.....	169
Figure 4.9 Eraut’s two triangle model of factors affecting learning at work.....	175
Figure 4.10 Emerging framework for analysing school–based professional communities .....	176
Figure 6.1 Guskey’s Model of Teacher Change (2000, p. 139).....	245
Figure 6.2 Desimone’s (2009, p.185) conceptual framework for studying the effects of professional development on teachers and student.....	247
Figure 7.1 An explanatory model of teachers’ learning at Fulton: dual layers of affordances.....	281

## Abstract

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Science and mathematics education in Australian senior secondary years is experiencing declining enrolments, negative student attitudes, a shortage of qualified teachers and a curriculum that lacks relevance to contemporary life (Masters, 2006, Smith, 2003, Tytler, 2007). Such evidence calls for transformation in secondary science and mathematics education and acknowledges that teachers' professional learning is central to achieving required transformation. Fulton Senior Secondary School<sup>1</sup> is a purpose built school designed to respond to the perceived crisis in teaching and learning of science and mathematics in the final years of schooling. It is also the site in which this qualitative interpretive case study was conducted. The purpose of the research was to investigate the processes and outcomes of teachers' professional learning in a setting that was designed to promote innovation and reform.

The research, conducted over a period of six years, used grounded theory methods to answer questions about what supported and sustained teachers' learning, and what were the outcomes of this learning for teachers, students and the school. To achieve an authentic account of the teachers' lived experiences, I positioned myself as an insider-researcher, working intensely and thoughtfully with staff at Fulton over a period of six years. The study revealed the nature of the interactions between contextual conditions, organisational elements and relationships factors that influenced teachers' professional learning. An explanatory model of professional learning was developed as an outcome of the theorising process. This identified the importance of alignments between: teachers' capacities, characteristics and sense of personal agency; and specific contextual conditions, organisational elements and relationship factors. Successful alignments were identified as affordances<sup>2</sup> for teachers' learning and formed the basis of the explanatory model. In essence, the contextual conditions, organisational elements and relationship factors of Fulton provided the architecture of an explanatory model of professional learning. The teachers acted as explorers of this architecture.

The research revealed that teachers brought existing beliefs and practices to Fulton, but through incidental and intentional learning, these beliefs and practices were expanded and often changed. Teachers developed deep understanding of many factors associated with effective pedagogy including: learning and learning processes; new science and mathematics content;

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<sup>1</sup> Fulton Senior Secondary School is a pseudonym for an innovative Australian high school catering for students from years 10 – 12.

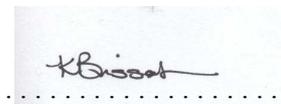
<sup>2</sup> An affordance is generated when environmental conditions enable the actors using the environment to achieve a desired goal.

effective curriculum design; and authentic assessment processes. The teachers were open to challenges and recognised their roles as learners in achieving the vision of the school. Their outcomes varied, but each teacher's learning influenced both the students and the school as a learning organisation. There was considerable evidence that the investment in teachers as learners was pivotal to achieving the vision of transforming science and mathematics education in the senior secondary years at this school.

## Declaration

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This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

A rectangular box containing a handwritten signature in black ink. The signature appears to be 'K Bissaker'.

.....  
Kerry Bissaker 17/9/2009

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This research has been a significant journey and the outcomes are a reflection of the commitment of the teachers and leadership team at [Fulton] to learning and seeking to improve models of schooling not just for students at the school but for all those interested in reshaping schools with future perspectives in mind. The teachers and leadership team have supported and encouraged my research and acted as critical friends and co-researchers. I especially thank the teachers who acted as case studies and in particular, Jayne. Her commitment and enthusiasm helped to maintain my own and the opportunity to work closely with her was an absolute privilege.

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